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Approximate Places of the Stars observed with Mauvais' second Comet.

No. of Star.	Magnitude.	Right Ascension.	Declination.	Remarks.
		h m s	° ′	
23	8	11 2 53	−53 52·6	No. (23) precedes *π Centauri* 11^m 5^s, and is 14′3″ south of it.
24	6·7	10 45 29	−56 27·1	No. (24) precedes No. (25) 41^s·8, and is 2′1″·5 south of it.
25	6	10 46 11	−56 25·1	No. (25) is 4921 of the Madras General Catalogue.
26	7	10 34 51	−57 7·6	No. (26) is the same as 4818 of the Madras General Catalogue.
27	9	10 16 45	−59 23	
28	9·10	10 17 49	−59 21	No. (29) precedes 4600 of the Madras Catalogue 5^m 23^s, and is 4′52″ north of it.
29	8·9	10 6 33	−60 28·7	
30	8	9 11 22	−64 23	
31	10	8 55 1	−64 40	
32	5	8 24 2	−65 37	No. (32) is *β Piscis Volantis*.
33	9	8 2 38	−65 52	

VI. On the Use of a new Micrometer, and its Application to the Determination of the Parallax of *Mars* at his ensuing Opposition. By M. Boguslawski. Communicated, with a Letter to the President, from Sir John Herschel.

This communication is introduced by the following letter from Sir John Herschel:—

"*Collingwood*, 30*th March*, 1845.

"My dear Sir,—I request permission to lay before the Astronomical Society the accompanying communication from M. Boguslawski, just received, in which he describes a new micrometer, and urges its application to the determination of the parallax of *Mars* at his ensuing opposition.

"M. Boguslawski, as will be observed, requests me to take on myself the sole charge of directing and arranging the observations he recommends. My engagements utterly preclude the possibility of my undertaking this duty, or any part of it. Nevertheless, being willing and desirous, so far as I am able, to forward this or any other well-recommended scientific object, I have considered it, on the whole, as my duty to forward his letter where it is sure to receive every due consideration; leaving it to the Council, if it should seem of sufficient importance, to make any arrangements they may see fit for meeting the end in view.

"I ought to add that I have myself had in use, for some time during my observations at the Cape, a process of micrometrical measurement by means of the transit of stars over the moveable wire of a position micrometer, set at a given angle of inclination to the parallel, which I have designated as *the method of oblique transits* for the purpose of determining the distances of double stars,

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which appears to me nearly or quite identical in principle with this of M. Boguslawski.

"An account of this method, and the results obtained by its use, have been for some time written for the press, and will form part of my forthcoming observations in the southern hemisphere.—I remain, my dear sir, &c.

"J. F. W. HERSCHEL."

The author states that he intends shortly to publish a detailed account of the construction and use of this micrometer, for observing differences of right ascensions and declinations of stars. Its principal peculiarity consists in this, that its scale is not dependent upon the individual telescope employed, and is therefore independent of the optical power of it, except only as far as the distinctness and precision of the images are concerned. An account of some observations made with it will be found in some of the forthcoming numbers of the *Astronomische Nachrichten*. It consists simply of one *wire*, *thread*, or *lamina*, which is placed in the common focus of the object-glass and eye-piece of a telescope, as a diameter across the field of view, in such a manner as to turn round the centre in every direction, and to make with the declination circle any given angle. The author then proceeds to shew that if τ°, τ', and T, be the times of passage across the wire of three stars (the first two being known, and the third being unknown or its position required), whose right ascensions are α°, α', and A, and declinations δ°, δ', and D, for any given position of the wire; and if θ°, θ', and Θ, be the corresponding times of transit of the same three objects for any other position transverse to the former, then

$$\mathrm{A}-\alpha^{\circ}=\mathrm{T}-\tau^{\circ}+\Big[(\alpha'-\alpha^{\circ})-(\tau'-\tau^{\circ}).\Big]\frac{(\Theta-\theta^{\circ})-(\mathrm{T}-\tau^{\circ})}{(\theta'-\theta^{\circ})-(\tau'-\tau^{\circ})}$$

$$\text{or}=\Theta-\theta^{\circ}+\Big[(\alpha'-\alpha^{\circ})-(\theta'-\theta^{\circ}).\Big]\frac{(\mathrm{T}-\tau^{\circ})-(\Theta-\theta^{\circ})}{(\tau'-\tau^{\circ})-(\theta'-\theta^{\circ})}$$

$$\text{and }\mathrm{D}-\delta^{\circ}=\frac{\delta'-\delta^{\circ}}{e}.\ \frac{(\Theta-\theta^{\circ})-(\mathrm{T}-\tau^{\circ})}{(\theta'-\theta^{\circ})-(\tau'-\tau^{\circ})}$$

$$\text{where } e=\frac{\cos.\frac{1}{2}\,(\delta'+\delta^{\circ})}{\cos.\frac{1}{2}\,(\mathrm{D}+\delta^{\circ})}, \text{ and is very nearly equal to 1.}$$

When the unknown object is a planet, since its position is determined by observations made at two different times, T and Θ, a correction will be necessary for its motion during the interval of time $\Theta-\mathrm{T}$; and the author determines the corrections to be applied to the times Θ and T, to reduce them to the same epoch.

The author considers this micrometer, both from its simplicity and from the precision of its results, to be exceedingly well adapted for observations of *Mars* and neighbouring stars, for the purpose of determining his parallax; and he gives the following formulæ for the value of the parallax :—

Let ψ_{W} and ψ_{E} be the latitudes of two observatories favourably situated for determining the parallax by observations of right ascen-

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sions, or differing considerably in longitude, ψ_W being the latitude of the western and ψ_E of the eastern station. Let also h_W and h_E be the corresponding hour-angles of *Mars*; A_W and A_E the observed right ascensions, reduced to the same instant; and D the approximate declination; then,

The horizontal parallax of *Mars*

$$= \frac{(A_E - A_W) \cos D}{\cos \psi_W \sin h_W - \cos \psi_E \sin h_E}$$

Again, if D_N and D_S denote the declinations observed at two stations differing very considerably in latitude (N denoting the northerly and S the southerly station, and the rest of the notation being suitably changed),

The horizontal parallax

$$= \frac{(D_S - D_N) \operatorname{Sec.} D}{\sin \psi_N - \sin \psi_S + \tan D \cos \psi_S \cos h_S - \tan D \cos \psi_N \cos h_N}$$

This communication is accompanied by a list of stars selected by the author as favourably situated for observation at the ensuing opposition of *Mars*; the list includes many of those set down for a similar purpose in the *Nautical Almanac* for 1845.

VII. On the almost total disappearance of the earliest Trigonometrical Canon. By A. De Morgan, Esq.

I lately found in a second-hand book-shop a trigonometrical canon, by the celebrated Rheticus, which was totally new to me, and, as I afterwards found, would have been just as new to any of the historians of astronomy and mathematics. I am therefore induced to make a communication on the subject to the Astronomical Society, which, more than any other, has a right to take interest in the history of tables for the facilitation of the application of arithmetic to geometry.

The paper which I now read is a remote consequence of the proscription of Copernican opinions by the Inquisition. No follower of Copernicus was more zealous or more plain-spoken than Rheticus or George Joachim of Rhætia. The master, whether from conviction or policy, called his theory no more than an hypothesis for the explanation of the planetary motions: the pupil strongly insisted on the absolute physical truth of the motion of the earth. Both were gathered to their fathers long before the storm arose: but long before that time arrived, there was a distinction drawn between the treatment of the two. In the *Index Expurgatorius*, it is not Copernicus who is forbidden to be read generally; the prohibition only extends to the work *de Revolutionibus*, and is accompanied with a *nisi corrigatur*. But Rheticus is wholly forbidden to be read in any of his works: nay, in Sotomaier's folio edition of the *Index* (Madrid, 1667) even the *Opus Palatinum*, though all but the very table is the work of Valentine Otho, is an unlawful book, unless on the condition that the praises of Rheticus in the preface be erased or passed over. And Riccioli tells us that